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PIVOTED CUTTING BLADE
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- (71) Applicant(s)  
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- (56) Prior Art Documents  
AU 31850/63 32.2  
AU 16295/70 32.2  
AU 87703/75 32.2
- (57) Claim

1. An elongated pivoted cutting blade for a rotary lawn mower, the blade having raised apertured mounting portion near one end part, a leading edge cutting portion near the other end part, a central part extending from said mounting portion toward said cutting portion, an inclined part joining said central part and said cutting portion, said inclined part slopes away from said central part in the opposite direction to said mounting portion, and an upturned trailing marginal edge portion also near said other end part, a longitudinally extending reinforcing impression formed in said central part so as to extend from adjacent said mounting to a portion terminating at and merging with said inclined part, and for at least part of its length tapering with respect to the width of the blade, said apertured mounting portion further comprises an opening located centrally of a dome shaped formation, the opening having two recesses opposite one another.

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

LODGED AT SUB-OFFICE  
7 AUG 1987

Sunbeam Corporation Limited, incorporated in New South Wales, of Wade Street, Campsie, New South Wales, 2194, AUSTRALIA, hereby apply for the grant of a standard patent for an invention entitled:

Pivoted Cutting Blade

which is described in the accompanying provisional specification.

The address for service is:-

Spruson & Ferguson  
Patent Attorneys  
Level 33 St Martins Tower  
31 Market Street  
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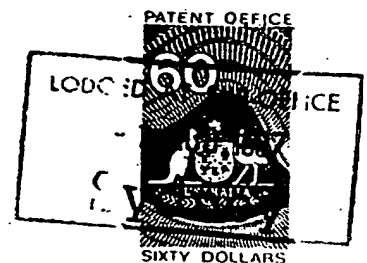
DATED this SEVENTH day of AUGUST 1987

Sunbeam Corporation Limited

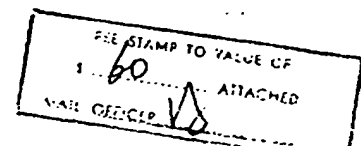
By:

*[Signature]*  
Registered Patent Attorney

TO: THE COMMISSIONER OF PATENTS  
OUR REF: 33340  
S&F CODE: 14370



5805/2



## COMMONWEALTH OF AUSTRALIA

## PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN  
APPLICATION FOR A PATENT

In support of the application made by Sunbeam Corporation Limited, for a patent for an invention entitled:

Pivoted Cutting Blade

GAVIN KERR

I/We

[full name of declarant(s)]

of

SUNBEAM CORPORATION LIMITED

[full address of declarant(s) - not post office box]

WADE STREET

CAMPSIE, N.S.W. 2194.

do solemnly and sincerely declare as follows:

1. I am/~~We are~~ authorised by Sunbeam Corporation Limited, the applicant for the patent to make this declaration on its behalf.
2. Peter Gordon Toms, of 35A Bruce Avenue, Belfield, New South Wales, 2191, AUSTRALIA, is/~~are~~ the actual inventor(s) of the invention and the facts upon which the applicant is entitled to make the application are as follows:-

By virtue of a contract of employment between the inventor(s) as employee(s) and the Applicant as employer, the Applicant is a person who would be entitled to have the patent assigned to it if a patent were granted upon an application made by the inventor(s).

DECLARED at *CAMPSIE* this *12<sup>th</sup>* day of *AUGUST* 1987

.....*Gavin Kerr*.....  
Signature of Declarant(s)

TO: THE COMMISSIONER OF PATENTS  
S&F REF: 33340

5881/4

FORM 10

COMMONWEALTH OF AUSTRALIA

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PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class Int. Class

Application Number: PI3607

Lodged: 7 August 1987

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Priority:

Related Art:

Name and Address  
of Applicant:Sunbeam Corporation Limited  
Wade Street  
Campsie New South Wales 2194  
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Actual Inventor: Peter Gordon Toms

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Sydney, New South Wales, 2000, Australia

Complete Specification for the invention entitled:

Pivoted Cutting Blade

The following statement is a full description of this invention, including the  
best method of performing it known to me/us

## PIVOTED CUTTING BLADE

This invention relates to cutting blades for rotary lawn mowers, and more particularly to the pivoted blades utilised on such machines.

Ideally, both from safety and efficiency view points, in the  
5 production of a rotary lawn mower the operative cutting plane of its blades with respect to the baseplate should be confined to close tolerances. Difficulty in maintaining these tolerances principally originates in the production of the blades themselves, which frequently results in an unacceptably high rejection rate. The problem has its  
10 roots in the requirement for a blade to be light-weight to avoid excessive centrifugal forces when operating, and thin for continued effective grass cutting in service. However, during the necessary heat treatment, for tempering purposes, a light-weight formed blade is liable to unpredictable distortion because of variation in composition of the  
15 metal raw stock.

It is the main object of the invention to provide a lawn mower cutting blade of a construction capable of repetitive production within acceptable tolerances with a low incidence of rejection.

To this end, the invention in one general form provides an  
20 elongated pivoted cutting blade for a rotary lawn mower, the blade having raised apertured mounting portion near one end part, a leading edge cutting portion near the other end part, a central part extending from said mounting portion toward said cutting portion, an inclined part joining said central part and said cutting portion, said inclined part  
25 slopes away from said central part in the opposite direction to said mounting portion, and an upturned trailing marginal edge portion also near said other end part, a longitudinally extending reinforcing impression formed in said central part so as to extend from adjacent said mounting to a portion terminating at and merging with said inclined part,  
30 and for at least part of its length tapering with respect to the width of the blade, said apertured mounting portion further comprises an opening located centrally of a dome shaped formation, the opening having two recesses opposite one another.

This invention will be described in more detail with reference to  
35 the accompanying drawings, in which:

Fig. 1 is a perspective view of a pivoted cutting blade constructed according to the present invention; and,

Fig. 2 shows a side elevation the same cutting blade.

The cutting blade 3 shown in the drawings consists of a generally rectangular strip of spring steel having near one end a mounting portion 4 which includes a bolt hole 5 and a surrounding dome-shaped impression 6. Near the outer end 7 of the blade 3 a chamfered cutting edge 8 is provided in a leading edge 9 while an inwardly tapering upwardly swept flange 10 is provided at the trailing edge 11 of the blade 3 and extends from the outer end 7 to an intermediate point 12 of the blade 3. The flange 10 at the outer end portion 7 of the blade 3 is provided with a notch 13 and a

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chamfered corner 14 for the purpose of noise reduction during operation. The blade 3 between the intermediate point 12 and the mounting portion 4 lies in a first plane with the outer end portion 7 containing the cutting edge 8 lying in a lower but not necessarily parallel plane, and an inclined step 15 is provided as a transition between the point 12 with the end portion 7. The description in this specification relates to the blade 3 when disposed in its normal operating condition.

The cutting blade 3 may be mounted either to the lower or upper surface of a cutter disc (not shown). In the former instance the  
10 domed-shaped formation 6 protrudes from the upper face of the blade 3, but from the underface of the blade 3 in the latter instance.

The production of a blade 3 is usually achieved through the use of a progressive die to which raw stock of spring steel is delivered and wherein various stages of processing occur. A fully formed blade is provided at the output from the die. It has been found that, due to the tempering process within the die, distortion or deflection, frequently occurs in the portion 16 of the blade 3 lying between the point 12 and the mounting  
portion 4.

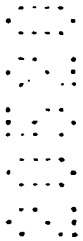
By this invention the progressive die (not shown) is constructed to  
20 create a longitudinally extending impression, or recess, 17 principally in the body portion 16. In the instance where the blade 3 is intended for underside mounting to the cutter disc the impression 17 may be formed as a recess within the upper surface of the blade 3. The impression 17 may be oppositely directed if the blade 3 is intended for topside mounting upon its cutter disc.

Very little distortion of the blade 3 occurs during processing either in the step 15 or the outer end portion 7 due to the reinforcing effect of the upswept flange 10 and the step 15, itself. A very satisfactory form of impression 17 has been found to be one which extends from the mounting  
30 portion 4 and tapers, in plan, towards the step 15 while maintaining an even depth. The depth of the impression 17 decreases as the outer end of the tapered impression 17 blends into the step 15. Best results have been obtained where the outer end of the tapering impression 17 extends a short distance beyond a transverse alignment with the inner end 18 of the upswept flange 10. It has also been found that, in the case of the impression 17 providing a recess in the upper surface of the blade 3, considerably less abrasion at its outer end occurs during service than if the impression 17 were provided in a non-tapering form. Further more, the re-inforcing effect of the sides 19 and 20 of the impression 17 is distributed more

uniformly over the body portion 16 for improved retardation of distortion during heating in the tempering process.

Whereas a preferred embodiment has been described in the foregoing passages it should be understood that other forms, modifications and refinements are feasible within the scope of this invention.

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The claims defining the invention are as follows:

1. An elongated pivoted cutting blade for a rotary lawn mower, the blade having raised apertured mounting portion near one end part, a leading edge cutting portion near the other end part, a central part  
5 extending from said mounting portion toward said cutting portion, an inclined part joining said central part and said cutting portion, said inclined part slopes away from said central part in the opposite direction to said mounting portion, and an upturned trailing marginal edge portion also near said other end part, a longitudinally extending  
10 reinforcing impression formed in said central part so as to extend from adjacent said mounting to a portion terminating at and merging with said inclined part, and for at least part of its length tapering with respect to the width of the blade, said apertured mounting portion further comprises an opening located centrally of a dome shaped formation, the  
15 opening having two recesses opposite one another.
2. A cutting blade according to claim 1, wherein tapering of said impression occurs over most of the length of said impression.
3. A cutting blade according to claim 1 or 2, wherein said  
20 upstanding trailing marginal edge portion extends from said other end part of the blade to an intermediate point thereof, and said impression extends longitudinally along said blade from near said apertured mounting portion to a position beyond said intermediate point of the blade.
4. A cutting blade according to any one of the preceding claims, wherein in the disposition of the blade in its normal working position  
25 the opening in said mounting portion is provided in an upwardly extending domed formation on the blade, and said impression is formed to provide a recess within the upper surface of the blade, so as to project in the opposite direction to said mounting.
5. A cutting blade according to any one of claims 1 to 3, wherein  
30 in the disposition of the blade in its normal working position the opening in said mounting portion is provided in a downwardly extending domed formation on the blade, and said impression is formed as a recess within the under surface of the blade.
6. A cutting blade according to any one of the preceding claims,  
35 wherein said impression is of uniform depth over the majority of its length.



7. A pivoted cutting blade for a rotary lawn mower substantially as hereinbefore described with reference to the accompanying drawings.

DATED this NINTH day of MARCH 1992

Sunbeam Corporation Limited

Patent Attorneys for the Applicant

SPRUSON & FERGUSON.

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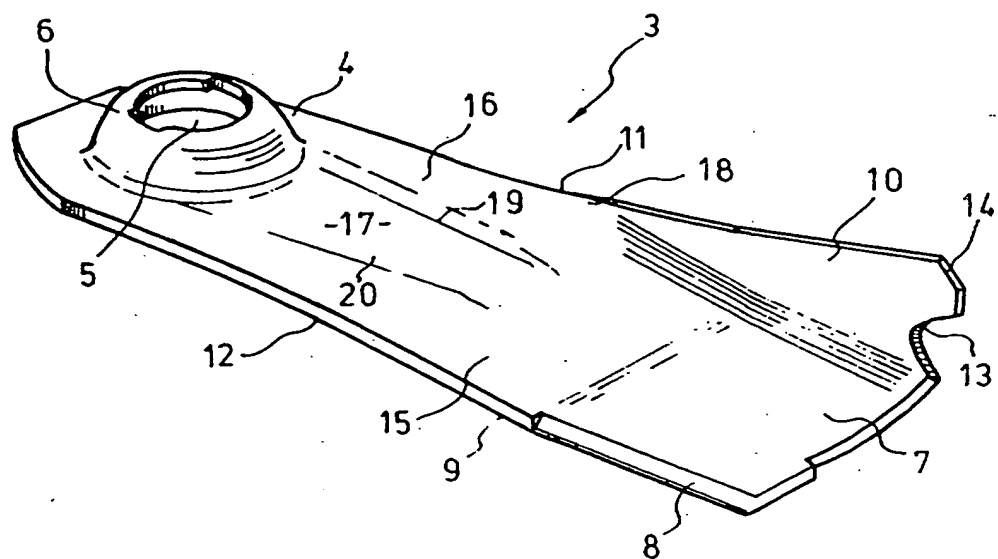


FIG. 1

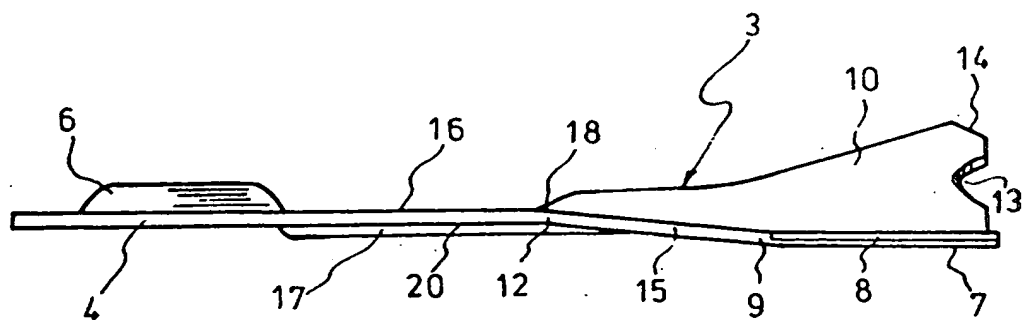


FIG. 2